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| 09/468,206 | 12/20/1999 | TAKESHI FUJITA | 09743/019001 | 3356 |

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| EXAMINER |
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GRAHAM, ANDREW R

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| ART UNIT | PAPER NUMBER |
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2697

DATE MAILED: 04/24/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/468,206

Applicant(s)

FUJITA, TAKESHI

Examiner

Andrew R Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following minor informalities:

- page 1, lines 1-2: the phrase "a loudspeaker system having a wide-directional characteristics" should be changed to either "a loudspeaker having wide-directional characteristics" or "a loudspeaker having a wide-directional characteristic". The same change should be made in each additional occurrence of this phrase found in the application, including those found in the claims as well as in the abstract.
- page 1, lines 11-12: the phrase "capable of listening sounds in good quality from various directions" should be changed to "capable of producing sounds in good quality that can be listened to from various directions" or another phrasing that more distinctly conveys what is intended to be understood from the overall sentence.
- page 2, lines 1-2: the phrase "is caused except transverse (frontal) characteristics on an" would be more easily understood if rephrased as "caused except along a transverse (frontal) surface of an"
- page 4, line 11: the phrase "the inclination characteristic" fails to distinctly convey what is intended to be understood from the phrase.

While these are a few of the more noticeable informalities found in the disclosure, the applicant's assistance is requested in correcting all discrepancies of a similar or relative nature.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, and 6** are rejected under 35 U.S.C. 102(b) as being anticipated by Carlsen II et al (USPN 5025473). Hereafter, "Carlsen II et al" will be simply referred to as "Carlsen".

Carlsen discloses a hemispherical speaker system of a particular physical arrangement. Specifically, regarding **Claim 1**, Carlsen discloses a six-sided transducer housing with six evenly spaced transducers, wherein each of the transducers is located on a side of the housing and each side of the housing is pentagon-shaped (col. 3, lines 44-59 and Figure 1). The even spherical spacing of the transducers reads on "a loudspeaker system having a wide directional characteristics" and the shape of the housing reads on "a loudspeaker

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body having a polyhedron shape". The plates that the transducers are mounted on are each mounted at a 114° angle with each other, and thus the transducers read on "a plurality of speakers disposed in an outer peripheral surface of the loudspeaker body in a manner that axial lines of adjacent two speakers intersect each other at a predetermined angle" (col. 4, lines 11-19). In regards to the output of the system, Carlsen discloses that the frequency response in the high and low ranges is flat enough that a crossover network is not needed with the system (col. 3, lines 37-42). Even the construction materials for the system contribute to the flatness of the frequency response (col. 2, lines 60-67). Thus, in the admission that such a system is not required, Carlsen discloses that such a frequency altering network or filter would have been a possibility in constructing such a system. This teaching of Carlsen reads on "a correction filter operatively connected to the speakers, said correction filter providing correction value set so as to obtain a flatness of sound pressures at various portions around the loudspeaker body".

Regarding **Claim 2**, Carlsen teaches that a weight restriction prevents his system from being of the most preferable, tradeoffs considered shape, which would have been a complete dodecahedron (col. 1, lines 51-55). The half dodecahedron as well as this most preferred embodiment read on "loudspeaker body has a regular polyhedron shape".

Regarding **Claim 6**, Carlsen discloses that a system with nearly perfect, omnidirectional radiation qualities would be in the shape of a sphere (col. 1, lines 42-45). This teaching reads on "a loudspeaker

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body having a spherical shape". As per the remaining components of the claim, please refer to the like teachings of Claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 3, 4, and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlsen in view of well known prior art (MPEP 2144.03).

As detailed above, Carlsen discloses a half-dodecahedron shaped speaker system with a flat enough frequency response that a crossover network, though a possible addition, would not have been necessary.

Regarding **Claim 3**, the details of a regular, dodecahedron shaped speaker system are discussed in regards to Claim 2.

As per the specifics of the speaker connections though, Carlsen does not specify:

- that the speakers are separated into three sets, wherein one of the speaker groups includes four speakers connected in series.

However, Examiner takes Official Notice that the nature of the electrical connections and the properties of elements connected in

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series and in parallel would have made the connection of the speakers in variously sized groups an obvious and desirable modification. Connecting a group of resistances, which in regards to the current system, said resistances would be the resistances of the speakers, the most simple arrangement and the one with the fewest number of connections would have been the connection of each of the resistances in series. From the basic electrical laws though, resistances in parallel have a lower combined overall resistance than resistances in series (series = $R_1 + R_2$, but parallel = $(R_1 * R_2) / (R_1 + R_2)$), and thus draw less overall current and require less operating power from the same voltage supply (noting that $\text{current}_{\text{total}} = \text{voltage} / \text{resistance}_{\text{total}}$). Thus, in optimizing the system for simplicity as well as efficiency, the electrical properties of a preferred embodiment would have consisted of groups of speakers in series instead of all of the speakers in series. To promote uniform operation of the speakers - especially in a system attempting to create flat, balanced sound pressured, the groups would have needed to comprise an equal number of speakers. With twelve speakers then, this would have left the option of having six groups of two speakers, four groups of three speakers, three groups of four speakers, two groups of six speakers, and twelve groups each with one speaker, noting again that group here is defined as a set of speakers in series. Thus, the third of the possible groups listed above reads on "three sets of speaker groups connected in parallel to each other, one of three sets of speaker groups including four speakers connected in series.

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To one of ordinary skill in the art at the time the invention was made, it would have been obvious to connect the speakers in the system of Carlsen in three groups with one of the groups comprising four speakers in series. As detailed above, the motivation behind such a modification would have been the improved tradeoffs between the simplicity of such a connection and the decrease in the amount of current passing through the speaker resistance and overall required by the system.

Regarding **Claim 4**, please refer to the like teachings of Claim 3.

Regarding **Claim 5**, Carlsen discloses that a crossover network for manipulating the frequencies received by the output transducers would have been a possible, but not necessary part of the speaker system (col. 3, lines 28-43).

Yet, Carlsen does not detail any of the specifics of such a crossover network, including:

- that the filter includes at least two resistors and capacitors operatively connected

However, the Examiner takes official notice that resistor-capacitor (RC) filters are one of the most common and well-known types of filters, and various embodiments of RC have been documented to include a plurality of resistances as well as capacitances. This reads on "filter includes at least two resistor and capacitors which are operatively connected".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to use an RC filter with multiple

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resistors and capacitors in the crossover network disclosed by Carlsen. Such an inclusion would have been desirable because a specifically resistor and a capacitor allow the voltage level of a received signal to be controlled and smoothly constrained, and multiple resistances and capacitances would have increased the degree of selective control that such a filter would have been able to impose.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fujita (JP Pub. No. 10-341493) is the same application as the one reviewed here within, but made to the Japanese Patent Office.

Fujita et al (JP Pub. No. 07-087585) discloses a polyhedron shaped wide directivity public address system.

Fujita et al (USPN 5812685) discloses a non-directional speaker system that produces sound that approximates a point source.

Smith (USPN 4890689) discloses an omnidirectional speaker system with twelve identical, particularly shaped sides.

Kyouno et al (USPN 5384856) discloses a channel divider that includes a plurality of filters for flattening the overall amplitude characteristic of the overall frequency response of the system.

Billings (USPN 5889876) discloses a hemispherically directed array of speakers.

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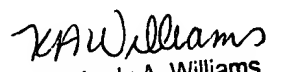
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is (703) 308-6729. The examiner can normally be reached on Monday-Friday (7:30-4:30), excluding alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams, can be reached at (703) 305-4863. The fax number for the organization where this application or proceeding is assigned is 703-872-9314 for regular communications, and 703-872-9315 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Andrew Graham
Examiner
A.U. 2697



Kimberly A. Williams
Primary Examiner
Technology Center 2600